We Claim:

1. A detector array comprising one or more groups of broad specificity biological sensing elements and variants thereof discretely immobilized onto or within a solid support, wherein the sensing elements and variants thereof have attached thereto a detectable label.

2. The detector array of claim 1 wherein there is at least 1 group.

3. The detector array of claim 2 wherein there are from 2 to 50 groups.

4. The detector array of claim 1 wherein each group consists of one biological sensing element and from 1 to 100 variants thereof.

5. The detector array of claim 4 wherein each group consists of one biological sensing element and from 5 to 25 variants thereof.

6. The detector array of claim 1 wherein each biological sensing element is less than 200kDa in weight.

7. The detector array of claim 6 wherein each biological sensing element is less than 100kDa in weight.

8. The detector array of claim 6 wherein each biological sensing element is less than 50kDa in weight.

9. The detector array of claim 1 wherein the biological sensing element is a polypeptide or a fragment, truncation, domain or concatenation thereof comprising at least the ligand binding site of the polypeptide.

10. The detector array of claim 9 wherein the ligand binding site or sequences affected by binding of a ligand contain one or more cysteine residues.

11. The detector array of claim 9 wherein the ligand binding site or sequences affected by binding of a ligand are modified to contain one or more cysteine residues.

12. The detector array of claim 9 wherein the ligand binding site or sequences affected by binding of a ligand contain or are modified to contain one cysteine residue.

13. The detector array of claim 1 wherein a variant is derived from a biological sensing element and differs therefrom in its binding specificity and/or affinity.

14. The detector array of claim 13 wherein the biological sensing element is a polypeptide or a fragment, truncation, domain or concatenation thereof comprising at least the ligand binding site of the polypeptide.

15. The detector array of claim 14 wherein the variant contains from 1 to 5 points of difference within the amino acids sequence from the sensing element from which it was derived.

16. The detector array of claim 14 wherein the variant contains from 2 to 4 points of difference within the amino acids sequence from the sensing element from which it was derived.

17. The detector array of claim 14 wherein the difference in the binding specificity/affinity results from a difference in the amino acid composition of the ligand binding site between the sensing element and the variant thereof.

18. The detector array of claim 17 wherein the difference in amino acid composition results from chemical modification.

19. The detector array of claim 17 wherein the difference in amino acid composition results from mutagenesis.

20. The detector array of claim 1 wherein the detectable label is susceptible to change upon ligand binding.

21. The detector array of claim 1 wherein the biological sensing element is a polypeptide or a fragment, truncation, domain or concatenation thereof comprising at least the ligand binding site of the polypeptide.

22. The detector array of claim 21 wherein the detectable label is attached to a cysteine residue in the biological sensing element or variant thereof.

23. The detector array of claim 21 wherein the detectable label is attached within the ligand binding site of the biological sensing element.

24. The detector array of claim 21 wherein the detectable label is attached at different amino acid positions within the ligand binding site of the biological sensing element and within the ligand binding site of each of the variants thereof.

25. The detector array of claim 20 wherein the detectable label is a fluorophore.

26. The detector array of claim 20 wherein the detectable label is a fluorescent probe.

27. The detector array of claim 26 wherein the fluorescent probe is selected from the group consisting of acrylodans, coumarin, IANBD, IAANS, MIANS and IAEDANS.

28. The detector array of claim 1 wherein the biological sensing element is selected from the group consisting of bacterial periplasmic binding proteins, membrane proteins, odorant binding proteins from mammalian or insect olfactory organs, serum albumin, CXR protein, chaperone proteins, cytochrome P450's, P-glycoprotein, major urinary protein and DNA binding proteins.

29. The detector array of claim 28 wherein the biological sensing element is a mammalian or insect binding protein.

30. The detector array of claim 28 wherein the biological sensing element is human, bovine or porcine odorant binding protein.

31. A detector array comprising a plurality of discrete biological sensing elements immobilized onto or within a solid support wherein:

(a) each sensing element has a ligand binding site capable of binding a broad range of structurally diverse ligands;

(b) the sensing elements are provided in groups, each group comprising a biological sensing element and at least one variant thereof, said variant differing from the element from which it was derived in its ligand binding specificity and/or affinity; and

(c) each sensing element and variant thereof having a detectable label attached thereto, the physical characteristics of said label being susceptible to change upon ligand binding.

32. A method for providing a detector array system comprising:

(a) providing a detector array comprising one or more groups of broad specificity biological sensing elements and variants thereof discretely immobilized onto or within a solid support, wherein the sensing elements and variants thereof have attached thereto a detectable label;

(b) contacting the array with a panel of test ligands;

(c) measuring the characteristics of the detectable label for each sensing element and variant thereof to produce a data array pattern; and

(d) using the data array pattern to generate a reference database of said patterns.

33. The method of claim 32 wherein the measurements are of fluorescence emission spectra.

34. The method of claim 32 wherein the measurements made are time dependent.

35. The method of claim 32 wherein the detectable label is a fluorescent label.

36. The method of claim 32 further comprising the steps of:

(e) contacting the array with a sample containing one or more sample ligands;

(f) producing a data array for the ligands;

(g) comparing the data array for the sample ligands with the reference database of data array patterns obtained from said test ligands.

37. The method of claim 36 wherein the sample ligand is of low molecular weight.

38. The method of claim 36 wherein the sample is liquid or substantially gaseous.

39. The method of claim 36 wherein the sample contains volatile and/or non-volatile compounds.

40. The method of claim 36 for discriminating individual compounds present in a sample either singly or in a mixture.

41. The method of claim 36 wherein the diversity of the specificity and/or affinity characteristics of the sensing elements is altered by altering the conditions under which the array is contacted with the sample.

42. The method of any one of claims 32 to 35 wherein the test ligands comprise two or more ligands having a desired biological activity.

43. The method of claim 42 which further comprises screening the array with a candidate ligand to determine the likelihood that said candidate ligand has said biological activity.

44. A computer system, the system containing one or more of (a) 1-, 2-, 3- or higher-dimensional binding data relating to the binding of a test set of ligands to an array of the invention, (b) processed binding data defining a set of parameters associated with the binding of a test set of ligands having a desired biological property; or (c) software capable of comparing binding data of an array of a candidate ligand with the set of parameters defined as (b).

45. Computer readable media with (a) 1-, 2-, 3- or higher dimensional binding data relating to the binding of a test set of ligands to an array of the invention; (b) processed binding data defining a set of parameters associated with the binding of a test set of ligands having a desired biological property; or (c) software capable of comparing binding data to an array of a candidate ligand with the set of parameters defined as (b).

46. Use of a system according to claim 44 for screening a candidate ligand in order to determine the likelihood that the candidate has said biological property.

47. The use of a detector array as defined in claim 1 in the screening of a ligand for activity.

48. The use of a detector array as defined in claim 1 in the determination of the presence of a ligand in a sample.

49. The use of a detector array as defined in claim 1 as a surrogage proteome.

50. A method for producing a detector array for analyzing a ligand, comprising:

(a) selecting a broad specificity sensing element capable of binding a broad range of structurally diverse ligands;

(b) performing mutagenesis and/or chemical modification of the ligand binding site of the sensing element to produce a variant differing from the element from which it was derived in its ligand binding specificity and/or affinity;

(c) attaching a label to each sensing element and variant thereof; and

(d) immobilizing each sensing element and variant thereof discretely onto or within a solid support.